

We claim:

1. An integral antenna and radio unit for a wireless communication device including a printed circuit board (PCB), comprising:

a radio module comprising a first RF connection to a PCB, the radio module being secured to the PCB; and

5 an antenna module comprising a second RF connection to the PCB, said antenna module being removably secured to said radio module;

wherein said radio module and said antenna module are not directly RF connected.

2. The integral antenna and radio unit of claim 1 wherein said radio 10 module comprises a radio chip and a shielding cover extending over said radio chip.

3. The integral antenna and radio unit of claim 2 wherein said antenna module comprises:

15 a non-conductive carrier having an upper end and a lower end, said lower end of said carrier having a recessed area formed therein which receives said radio module therein; and

an antenna positioned on said upper end of said carrier having contact pins extending therefrom forming the second RF connection to the PCB.

4. The integral antenna and radio unit of claim 3 further comprising a 20 cover that extends over said antenna module.

5. The integral antenna and radio unit of claim 3 wherein said cover is releasably to said carrier.

6. The integral antenna and radio unit of claim 5 wherein said cover is slidably mounted on said carrier.

25        7.     The integral antenna and radio unit of claim 3 wherein said upper end of said carrier has a recessed area formed therein and wherein said antenna module is received in said recessed area in said upper end of said carrier.

8.     The integral antenna and radio unit of claim 3 wherein said antenna comprises a PIFA.

30        9.     The integral antenna and radio unit of claim 3 wherein said antenna module is snapped onto said carrier.

10.    The integral antenna and radio unit of claim 9 wherein said carrier is snapped onto said radio module.

35        11.    The integral antenna and radio unit of claim 1, wherein said second RF connection is formed by at least one contact pin.

12.    The integral antenna and radio unit of claim 1, wherein said second RF connection is formed by at least a feed contact and a shorting contact.

13.    The integral antenna and radio unit of claim 1, wherein said first RF connection is formed by at least one ball array pad.

40        14.    The integral antenna and radio unit of claim 1, further comprising a non-conductive carrier separating said radio module and said antenna module.

15.    The integral antenna and radio unit of claim 14, wherein said carrier comprises a dielectric material.

45        16.    The integral antenna and radio unit of claim 14, wherein said carrier comprises an insulating material.

17. An integral antenna and radio unit for a wireless communication device including a printed circuit board (PCB), comprising:

a radio module comprising a first RF connection to a PCB, said radio module being secured to the PCB;

5 an antenna module comprising a second RF connection to a PCB, said antenna module being removably secured to said radio module; and

means for prohibiting a direct RF connection between said radio module and said antenna module.

18. The integral antenna and radio unit of claim 17, wherein the means 10 for prohibiting comprises at least an RF insulating material.

19. The integral antenna and radio unit of claim 17, wherein the means for prohibiting comprises at least an RF dielectric material.

20. The integral antenna and radio unit of claim 17, wherein said 15 antenna module comprises a carrier; the carrier forming the means for prohibiting.